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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/720,006	12/19/2000	Johann Karl	RDID00115US	5872

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EXAMINER	
PADMANABHAN, KARTIC	
ART UNIT	**PAPER NUMBER**
1641	14

DATE MAILED: 10/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/720,006	KARL ET AL.	
	Examiner	Art Unit	
	Kartic Padmanabhan	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 October 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *44-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *44-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/1/03 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 44, 47-49, 51, and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuo (EP 0 813 064 A1). The reference discloses a solid support on which an antibody specific to an epitope of an analyte and a first labeled antibody, which is specific to another epitope of the analyte, are immobilized. A second labeled antibody is also provided which is specific to the first labeled antibody (abstract). The signal generated by the complex is detected on the substrate. The solid support of the reference may be any of those materials known in the art as being suitable for conducting immunoassays, such as the interior surface of a microtiter well, which is inherently non-porous (Col. 3). According to one embodiment, there is a reagent region containing a second antibody labeled with gold sol, a second reagent region containing a third antibody labeled with gold sol, and a capture zone with immobilized first antibody (Col. 4).

Although the regions may overlap, it is not necessary and there may be spacing between the regions (Cols. 4-5). The support may also be provided with a positive control zone (Col. 5). Metal sols are the preferred signal generators, but any species producing a detectable signal may be used, including latex particles (Col. 5).

4. Claims 44, 45, 49, and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Bellet et al. (US Pat. 5,011,771). The reference discloses an immunometric assay comprising the formation of a complex between antigen and multiple immobilized monoclonal antibodies against different epitopes of the antigen and with a detectably labeled monoclonal antibody (abstract). The sandwich or immunometric assay is meant to include simultaneous, forward, and reverse sandwich assays (Col. 5,lines 24-30). In a forward immunometric assay, sample is contacted with solid phase bound antibodies such that antigen in the sample is bound to the solid phase bound antibodies. Detectably labeled antibodies are then added to the solid phase. Labeled antibody on the solid phase is then detected as an indication of analyte presence (Cols. 5-6). The solid phase of the reference is an immunoabsorbent, which may be beads formed from glass, polystyrene, polypropylene, dextran, nylon, and other materials, or tubes formed or coated with such materials (Col. 8, lines 1-3). According to the reference, it is important that the multiple immobilized antibodies be bound in close proximity (Col. 8, lines 7-9). The monoclonal antibody may be labeled with any detectable label (Col. 8, lines 20-21). Any animal sample containing a detectable antigen can be used in the assay (Col. 8, lines 31-35). Any multivalent antigen can be detected with the assay of the reference, including viral antigens such as Hepatitis B, Herpes Simplex viruses I and II, Herpes Virus Zoster, cytomegalovirus, Epstein-

Barr virus, and Papova viruses such as measles, rubella, or influenza (Col. 8, lines 62-68). The materials for use in the assay are a=ideally suited for packaging in a kit (Col. 9, lines 62-63).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 45, 46, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo (EP 0 813 064 A1). The reference teaches an immunoassay method, as previously

discussed under 35 USC 102(b). However, the reference does not teach specific analytes or the size of the test area.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to use test areas with diameters less than 1 mm and assay for specific analytes with the method and kit of Kuo. One would have been motivated to do so because the use of test areas with a small diameter allows for a greater number of receptors to be placed on the substrate, or alternatively, allows for the use of smaller substrates. In addition, one could have assayed for any number of analytes with the method and kit of Kuo with a reasonable expectation of success. Depending on the analyte of interest, one of skill in the art would have known which antibodies to use for its detection. Further, the selection of test areas with a specific diameter and a specific analyte to assay for both represent simple optimizations of the assay protocol that one of skill in the art could have easily chosen based on preference.

9. Claims 46-48, 50, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellet et al. (US Pat. 5,011,771). The reference teaches a multiepitopic assay, as previously discussed under 35 USC 102(b). However, the reference does not teach the diameter of the test area, a control area, or latex particles as the label.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to use a control area and latex particles as the label with the method and kit of Bellet et al. One would have been motivated to do so because the use of a control area allows determination of background or baseline, which permits calibration of the assay system and a more sensitive measurement of analyte presence. In addition, since the reference teaches that any suitable label may be used, one could have used latex particles with a reasonable expectation

of success. Further, the selection of a specific label simple represents an optimization of the assay protocol that one of skill in the art could have easily chosen based on preference.

It would also have been obvious to use test areas with diameters less than 1 mm. The reference teaches that immobilized antibodies must be in close proximity to each other, and choosing the actual size of the area simply represents an optimization of the assay. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Response to Arguments

10. Applicant's arguments filed 10/1/03 have been fully considered but they are not persuasive.

11. Applicant's arguments that the Kuo reference does not teach a solid support with spatially separate test areas with first and second receptors bound in each, respectively, are unconvincing. The reference clearly teaches multiple spatially separate regions with different immobilized receptors in each. Further, in one region, there is immobilized an antibody specific for 1 epitope of the analyte. In a spatially separate region, there is immobilized a primary signal generator, which has bound to it a second antibody that is specific to a second epitope of the analyte. As such, this second antibody is indirectly immobilized to the solid phase via the signal generator, and the claims allow for indirect immobilization.

12. Applicant argues that the Bellet reference teaches a mixture of more than one antibody applied to the solid phase and not the limitation of no more than one analyte specific receptor bound per test area. First, it is noted that the disclosure of multiple immobilized antibodies disposed in close proximity is interpreted as meeting the limitation of spatially separate test

areas. In addition, in example 1, to which applicant has directed the examiner's attention, the reference may indeed teach the mixture of multiple antibodies; however, the reference is in no way limited to its examples or preferred embodiments. Although a mixture may be the most sensitive, using single antibodies would also work.

13. Applicant's arguments with respect to the rejections under 35 USC 103 are based on the premise that the rejections under 35 USC 102 are not proper, a position which has already been addressed and found unpersuasive.

Conclusion

Claims 44-52 are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kartic Padmanabhan whose telephone number is 703-305-0509. The examiner can normally be reached on M-F (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 703-305-3399. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Kartic Padmanabhan
Patent Examiner
Art Unit 1641

*** KP

LONG V. LE
SUPERVISORY PATENT EXAMINER
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10/17/07